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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/851,975	05/10/2001	Osamu Ichiyoshi	WN-2355	4104
30743	7590	11/30/2004	EXAMINER	
WHITHAM, CURTIS & CHRISTOFFERSON, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190			PHAN, MAN U	
			ART UNIT	PAPER NUMBER
			2665	

DATE MAILED: 11/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary

Application No.

09/851,975

Applicant(s)

ICHIYOSHI, OSAMU

Examiner

Man Phan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-7, 9-11 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 4, 8, 12 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/02/2003.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The application of Ichiyoshi for a "FDM-CDMA transmitting method, FDM-CDMA receiving method, FDM-CDMA transmitting device and FDM-CDMA receiving device" filed 05/10/2001 has been examined. Claims 1-16 are pending in the application.

Priority

2. Acknowledgment is made of applicant's claim for foreign priority based on an application number 138181/2000 filed in Japan on 05/11/2000. It is noted, however, that applicant has not filed a certified copy of the 138181/2000 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC ' 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5-7, 9-11 and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uesugi et al. (US#2002/0159425) in view of Aihara (US#6,782,041).

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With respect to claims 9-11 and 13-15, Uesugi et al. (US#2002/0159425) discloses a novel system and method for radio communications with a combination of a multicarrier modulation in OFDM-CDMA, according to the essential features of the claims. Uesugi et al.

(US#2002/0159425) discloses an OFDM-CDMA radio communications, in which a serial data stream comprising N digital symbols (serial data stream) (Fig. 1) are multiplied, one symbol at a time, by a spreading code with spreading factor M . After spreading, chips undergo sequential IFFT processing one symbol at a time with M chips in parallel. As a result, N OFDM symbols with M subcarriers are generated. That is, with frequency domain spreading, after spreading, chips are arranged along the frequency axis at their respective times (FIG. 4). In other words, after spreading, chips are arranged on different subcarriers (Page 1, para. [0006] to [0009]).

Uesugi further teaches in Figs. 6&7 block diagrams illustrated the configurations of transmitting and receiving sides in OFDM-CDMA, in which the transmitting side radio communication apparatus shown in Fig. 6 comprises a serial/parallel conversion section (S/P section) 101, time domain spreaders 102-1 through 102- N , rearranging section 103, inverse fast Fourier transform section (IFFT section) 104, radio transmitting section 105, and antenna 106. The receiving side radio communication apparatus shown in Fig. 7 comprises an antenna 201, radio receiving section 202, Fourier transform section (FFT section) 203, arrangement restoration section 204, time domain despreaders 205-1 through 205- N , RAKE sections 206-1 through 206- N , and parallel/serial conversion section (P/S section) 207. First, in the transmitting side radio communication apparatus shown in FIG. 6, N digital symbols 1 through N (serial data stream) shown in FIG. 1 are converted to parallel data streams by the S/P section 101, and each of these is input to the corresponding time domain spreader. That is, digital symbol 1 is input to time

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domain spreader 102-1, digital symbol 2 is input to time domain spreader 102-2, and so on through to digital symbol N which is input to time domain spreader 102-N (Page 3; para. [0044] to [0062]). As it's noted in the prior art, the transmitting-side apparatus generates an OFDM signal by performing IFFT processing using an information signal that has undergone modulation processing and spreading processing, and the receiving-side apparatus generates a demodulated signal by performing despreading processing and demodulation processing on a signal extracted by means of IFFT processing. In conventional transmission according to an OFDM-CDMA system which combines an OFDM system and CDMA system, high quality transmission data can be transmitted to many communication terminals at high speed by effectively using the resistance to frequency selective fading by the OFDM modulation system and the resistance to interference and noise by the CDMA modulation system, results in an ability to implement high-speed, high-quality communications.

However, Uesugi et al. (US#2002/0159425) does not expressly disclose the spreading code/inverse spreading code setting circuit for generating the spreading codes/inverse spreading codes unique/inherent to the users. In the same field of endeavor, Aihara (US#6,782,041) discloses radio receiver comprising: an addition spreading code generation section for dividing an input spreading code group into at least two groups and adding spreading codes included in each group to each other at every chip to generate new spreading codes; a group selection section for calculating correlation values between each of the spreading codes generated by the addition spreading code generation section and a received signal and selecting a group having a maximum correlation value among the calculated correlation values, and a control section for judging whether a number of spreading codes

included in the group selected by the group selection section is one or not, and inputting all of the spreading codes included in the selected group into the spreading code generation section when the number of the spreading codes is two or more, and further setting the spreading codes included in the selected group to be used at despreading processing to the received signal when the number of the spreading codes is one (Col. 15, lines 38 plus). Aihara further teaches a method in which a plurality of spreading code generation sections are equipped and a long code necessary for each correlation processing is generated one by one at the time of the correlation processing. Figs. 3-5 are block diagrams illustrating the schematic configuration, in which grouping setting section 206 controls spreading code generation sections 207 to input a plurality of long codes into an adder 208 one by one, and thereby the plural long codes are grouped. The adder 208 adds the input plural long codes to each other at every chip in each group, and a correlation section 204 calculates a correlation value between the added long codes and a received signal. A maximum correlation value detection section 205 selects a group indicating the maximum correlation value, and the grouping setting section 206 again divides the long codes included in the selected group into a plurality of groups. By the repetition of the procedures until the long codes in a group becomes one, the long code is identified (Col. 5, lines 23 plus).

Regarding claims 1-3 and 5-7, they are method claims corresponding to the apparatus claims above. Therefore, claims 1-3 and 5-7 are analyzed and rejected as previously discussed with respect to claims 9-11 and 13-15.

One skilled in the art would have recognized the need for effectively and efficiently routing and forwarding of information in packet switching network, and would have applied

Aihara's novel use of the spreading code and despreading codes in radio communications into Uesugi's teaching of the OFDM-CDMA transmitting/receiving system. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Aihara's Radio receiver and method for identifying spreading codes into Uesugi's radio communication apparatus and radio communication method with the motivation being to provide a method and apparatus for an OFDM-CDMA communication system.

Allowable Subject Matter

5. Claims 4, 8, 12, 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest wherein the spreading code setting circuit only generates the spreading codes corresponding to the frequency channels used in the FDM-CDMA method when FDM method broadcasting and the FDM-CDMA method communication are used together for transmission, as specifically recited in the claims.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The Shattil (US#2002/0150070) is cited to show the method and apparatus for using frequency diversity to separate wireless communication signals.

The Saito et al. (US#2001/0038664) is cited to show the communication system.

The Fukumoto et al. (US#6,507,605) is cited to show the rake receiver in direct spreading CDMA transmission.

The Schilling (US#5,469,468) is cited to show the overlaying spread-spectrum satellite system and method.

The Lee (US#6,373,861) is cited to show the frequency synchronizing device for OFDM/CDMA system.

The Honda (US#5,970,084) is cited to show the CDMA mobile communication receiving apparatus.

The Nakagawa et al. (US#6,256,508) is cited to show the simultaneous broadcasting system, transmitter and receiver therefor.

The Murai (US#5,966,377) is cited to show the spread spectrum communication system.

The Miya et al. (US#6,519,238) is cited to show the transmission apparatus and base station apparatus using the same.

The Agee et al. (US#2002/0122465) is cited to show the highly bandwidth efficient communications.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149.

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The examiner can normally be reached on Mon - Fri from 6:00 to 3:00 EST. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (571) 272-3155. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

8. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to: (703) 305-9051, (for formal communications intended for entry)

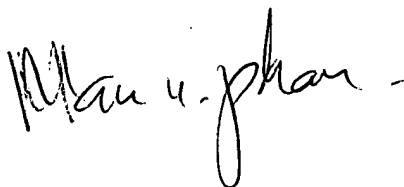
Or: (703) 305-3988 (for informal or draft communications, please label

"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2021 Crystal Drive,
Arlington, VA., Sixth Floor (Receptionist).

Mphan

11/17/2004.

A handwritten signature in black ink, appearing to read "Man U. Phan". The signature is stylized with a large, looped 'M' and a trailing flourish.

MAN U. PHAN
PRIMARY EXAMINER